Final Report on NAG5-3281

Timing and Spectral Study of LMC X-4

Specialized programs for analysis of RXTE data to achieve the purposes of this study were developed with the support from this contract. These programs have been employed in the analysis and publication of an RXTE observation of 4U 1538-52 that revealed a surprisingly large
eccentricity of the orbit and evidence of orbital decay ("The orbit of the binary X-ray pulsar 4U 1538-52 from ROSSI X-RAY TIMING EXPLORER observations", G. W. Clark 2000, ApJ 542, L133).

Meanwhile two studies of LMC X-4 based on RXTE and Beppo-Sax observations have been published covering almost completely the objectives of our proposed study ("Orbital decay in LMC X-4", A. L. Levine, S. A. Rappaport, & G. Zojcheski 2000, ApJ, 541, 194; "The 0.1-100 keV spectrum of LMC X-4 in the high state: evidence for a high-energy cyclotron absorption line", A. La Barbera et al. 2001, ApJ 553, 375). Both are based on more extensive observations than were
obtained for our proposed study and present more comprehensive and accurate results than can be derived from our data. The effort to complete our proposed RXTE study of LMC X-4 has therefore been abandoned in favor of other research which can take better advantage of the specialized programs mentioned above.